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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/559,724	YASUDA ET AL.	
	Examiner	Art Unit	
	Tayan Patel, Esq.	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☒ Claim(s) *1* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/7/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: "a electrode" on line three should read "an electrode. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 18-21, 27-30 & 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Olgado et al (US 2002/0096436).

Regarding claim 18, Olgado et al describes an electrolytic processing apparatus comprising: a substrate holder, 14, for holding a substrate, 221; an electrode base, 16, comprising an electrode member for contact with the substrate, held by the substrate holder, in the presence of a liquid/electrolyte for processing (See page 3, para 35-36); a drive mechanism, 2464, for moving the substrate and electrode member relative to each other in the vertical direction (See page 5, para 52); and a guide member/thrust plate, 67, disposed on the substrate holder, 14, which comes into contact with the electrode member for guiding the electrode and substrate upon contact (See figure 3b; See also page 6, para 54).

Regarding claim 19, Olgado et al further describes an electrode connected to a power source, 272, and an ion exchanger, 2289 on the surface of the electrode (See figure 2).

Regarding claim 20, Olgado et al describes an electrolytic processing apparatus comprising: a substrate holder, 14, for holding a substrate, 221; an electrode base, 16, comprising an electrode member for making contact with the substrate, held by the substrate holder, in the presence of a liquid/electrolyte for processing (See page 3, para 35-36); a drive mechanism, 2464, for moving the substrate and electrode member relative to each other in the vertical direction (See page 5, para 52); and a guide member/thrust plate, 67, disposed on the substrate holder, 14, which comes into contact with the electrode member for guiding the electrode and substrate upon contact, wherein the contact area is constant (See figures 2, 3a-3b; See also page 6, para 54).

Regarding claim 21, Olgado et al further describes an electrode connected to a power source, 272, and an ion exchanger, 2289 on the surface of the electrode (See figure 2).

Regarding claims 27 and 29, Olgado et al describes an electrolytic processing method for bringing a substrate holder, 14, for holding a substrate, 221 into contact with an electrode base, 16, comprising an electrode member in the presence of a liquid/electrolyte for processing (See page 3, para 35-36); a drive mechanism, 2464, for bringing the upper surface of the electrode into contact with the guide member/thrust plate, 67, (See page 6, para 54) disposed around the substrate for guiding the electrode

when contacting the substrate, wherein the contact area is constant (See figure 2; See also page 5, para 52) for processing the surface of the substrate.

Regarding claims 28 and 30, Olgado et al discloses all of the claimed limitations as discussed with respect to claim 27 and 29 above, respectively, wherein Olgado et al further describes an electrode connected to a power source, 272, and an ion exchanger, 2289 on the surface of the electrode (See figure 2).

Regarding claim 32, Olgado et al describes; an electrode base, 16, comprising an electrode member and an ion exchanger, 2289, covering the surface of the electrode; a substrate holder, 14, for holding a substrate, 221, capable of bringing the workpiece close to or into contact with the ion exchanger of the electrode member (See page 3, para 35-36); a power source via the controller, 222, connected tot he electrode of the electrode member via anode supports (See page 3, para 36); & wherein the electrode is made round given the physical dimension of the assembly being circular (See fig. 2)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-5, 7-8, 10-14 and 23-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Olgado et al (US 2002/0096436) in view of Bonga et al (US 3588196).

Regarding claims 1 & 8, Olgado et al describes an electrolytic processing apparatus comprising: a substrate holder, 14, for holding a substrate, 221; an electrode base, 16, comprising an electrode member for contact with the substrate, held by the substrate holder, in the presence of a liquid/electrolyte for processing; and a support base, 2290, for floatingly holding the electrode base via stationary supports, 2294 (See page 3, paras 35-36). Olgado et al further describes an apparatus for polishing/etching (See page 1, para 5) but does not explicitly discuss the supports as floating mechanisms (floating is interpreted as movable).

Bonga et al describes an electroerosion apparatus (etching) (See apparatus) wherein floating mechanisms/hydrostatic bearings, 8a & 9a, are provided to the support bases/plates, 8 & 9, in relation to the electrode base/piston, 6, and cylindrical rod member, 7, in order to increase precision of the positioning (See column 2, lines 40-75).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the hydrostatic bearings in Bong et al in the apparatus of Olgado et al in order to increase precision of the positioning.

Regarding claims 2 and 10, Bonga et al further describes the hydrostatic bearings, 8a & 9a, acting as a stopper for keeping the rod member/electrode base constantly substantially centered (limiting movement) irrespective of any lateral load or radially directed external force applied to the rod member, 7 (See column 4, lines 37-70).

Regarding claims 3 and 11, Bonga et al further describes the bearings having an elastic body given their contoured shape around the rod member (See figure 1).

Regarding claims 4 and 12, modified Olgado et al describes all of the claimed limitations of claims 1 and 8, respectively, but does not describe a pressure chamber formed between the electrode base and the support base, and surrounded by an elastic membrane.

Bonga et al describes a pressure chamber (thus having an elastic membrane), 21, formed between the electrode base and support in order to increase precision of the positioning (See figure 2; See also column 3, lines 67-75).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pressure chamber in Bonga et al in the apparatus of modified Olgado et al in order to increase precision of the positioning.

Regarding claims 5 and 13, modified Bonga describes all of the limitations of claims 4 and 12 above, but does not describe supplying a fluid with a predetermined pressure into the pressure chamber.

Bonga et al describes a fluid with a predetermined pressure supplied via supply line, 23, to the pressure chamber (See column 3, lines 20-40) in order to increase precision of the positioning of the electrode base and support base (See column 2, lines 40-75).

It would have been obvious to one of ordinary skill in the art at the time the invention was claimed to use the supply line in Bonga et al in the apparatus of modified Olgado et al in order to increase precision of the positioning of the electrode base and support base.

Regarding claims 7 and 14, Olgado et al further describes an electrode connected to a power source, 272, and an ion exchanger, 2289 on the surface of the electrode (See figure 2).

Regarding claims 23 and 25, Olgado et al describes an electrolytic processing method wherein a substrate holder, 14, for holding a substrate, 221 is brought into contact with an electrode base, 16, comprising an electrode member in the presence of a liquid/electrolyte for processing; and a support base, 2290, for floatingly holding the electrode base via stationary supports, 2294 (See page 3, paras 35-36). Olgado further disclose moving of the assembly, 14 via an arm in the vertical direction (See figure 3a-3b). Olgado et al further describes an apparatus for polishing/etching (See page 1, para

5) but does not explicitly discuss the supports as floating mechanisms (floating is interpreted as movable).

Bonga et al describes an electroerosion apparatus (etching) (See apparatus) wherein floating mechanisms/hydrostatic bearings, 8a & 9a, are provided to the support bases/plates, 8 & 9, in relation to the electrode base/piston, 6, and cylindrical rod member, 7, in order to increase precision of the positioning (See column 2,lines 40-75).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the hydrostatic bearings in Bong et al in the method of Olgado et al in order to increase precision of the positioning.

Regarding claims 24 and 26, modified Olgado discloses all of the claimed limitations as discussed with respect to claims 23 and 25, respectively, wherein Olgado et al further describes an electrode connected to a power source, 272, and an ion exchanger, 2289 on the surface of the electrode (See figure 2).

7. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olgado et al (US 2002/0096436) in view of Bonga et al (US 3588196) as applied to claim 1 above, and further in view of Moore et al (US 2003/0226764)

Regarding claim 6, Olgado et al describes a polishing apparatus (See page 1, para 5) but modified Olgado et al does not describe a plurality of electrodes.

Moore et al describes a polishing apparatus (See abstract) wherein a plurality of electrodes, 20a, are used in order to increase the uniformity with which the conductive material is removed (See page 1, para 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of electrodes in Moore et al in the apparatus of modified Olgado et al in order to increase the uniformity with which the conductive material is removed.

Regarding claim 9, modified Olgado et al does not describe a plurality of electrodes.

Moore et al describes a polishing apparatus (See abstract) wherein a plurality of electrodes, 20a, are used in order to increase the uniformity with which the conductive material is removed (See page 1, para 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of electrodes in Moore et al in the apparatus of modified Olgado et al in order to increase the uniformity with which the conductive material is removed.

However, modified Olgado et al still fails to describe the plurality of electrodes supported floatingly by independent floating mechanisms.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use independent floating mechanisms for each electrode in order to increase precision positioning of the electrodes in relation to the support base.

8. Claims 15-17 rejected under 35 U.S.C. 103(a) as being unpatentable over Olgado et al (US 2002/0096436) in view of Bonga et al (US 3588196) in view of Moore et al (US 2003/0226764).

Regarding claim 15, Olgado et al describes an electrolytic processing apparatus comprising: a substrate holder, 14, for holding a substrate, 221; an electrode base, 16, comprising an electrode member for contact with the substrate, held by the substrate holder, in the presence of a liquid/electrolyte for processing; and a support base, 2290, for floatingly holding the electrode base via stationary supports, 2294 (See page 3, paras 35-36). Olgado et al describes a polishing apparatus (See page 1, para 5) but modified Olgado et al does not describe a plurality of electrodes.

Moore et al describes a polishing apparatus (See abstract) wherein a plurality of electrodes, 20a, are used in order to increase the uniformity with which the conductive material is removed (See page 1, para 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of electrodes in Moore et al in the apparatus of modified Olgado et al in order to increase the uniformity with which the conductive material is removed.

Olgado et al further describes an apparatus for polishing/etching (See page 1, para 5) but does not explicitly discuss the supports as floating mechanisms (floating is interpreted as movable) and adjustment members for floating a part of the plurality of electrodes.

Bonga et al describes an electroerosion apparatus (etching) (See apparatus) wherein floating mechanisms/hydrostatic bearings, 8a & 9a (the bearing also act as adjustment members), are provided to the support bases/plates, 8 & 9, in relation to the electrode base/piston, 6, and cylindrical rod member, 7, in order to increase precision of the positioning (See column 2,lines 40-75).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the hydrostatic bearings/adjustment members in Bong et al in the apparatus of Olgado et al in order to increase precision of the positioning.

However, modified Olgado et al still fails to describe the plurality of electrodes supported floatingly by independent floating mechanisms.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use independent floating mechanisms for each electrode in order to increase precision positioning of the electrodes in relation to the support base.

Regarding claim 16, Olgado et al further describes power submitted to the electrodes via anode supports, 2294 (See figure 2).

Regarding claim 17, Olgado et al further describes an electrode connected to a power source, 272, and an ion exchanger, 2289 on the surface of the electrode (See figure 2).

9. Claims 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olgado et al (US 2002/0096436) as applied to claims 20 & 30, respectively, and further in view of Moore et al (US 2003/0226764).

Regarding claims 22 and 31, Olgado et al describes a polishing apparatus/method (See page 1, para 5) but modified Olgado et al does not describe a plurality of electrodes.

Moore et al describes a polishing apparatus (See abstract) wherein a plurality of electrodes, 20a, are used in order to increase the uniformity with which the conductive material is removed (See page 1, para 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of electrodes in Moore et al in the apparatus/method of modified Olgado et al in order to increase the uniformity with which the conductive material is removed.

Modified Olgado still does not describe the outer shape of the guide member similar to the outer shape defined by the electrode members which are in contact with the substrate held by the substrate holder.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to contour the shape of the guide member to the electrode members because similar shapes will provide the best contact between members, thus producing better uniformity. See MPEP 2144.04 – Shape.

10. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olgado et al (US 2002/0096436) in view of Hafeman et al (US 5164319).

Regarding claim 33, Olgado et al describes; an electrode base, 16, comprising an electrode member and an ion exchanger, 2289, covering the surface of the electrode; a substrate holder, 14, for holding a substrate, 221, capable of bringing the

workpiece close to or into contact with the ion exchanger of the electrode member (See page 3, para 35-36); & a power source via the controller, 222, connected to the electrode of the electrode member via anode supports (See page 3, para 36). Olgado et al further describes a semiconductor electrode in an electrochemical cell (See abstract) but does not describe an insulator interpose between the ion exchanger and the surface, facing the workpiece, of the electrode.

Hafeman et al describes a semiconductor electrode in an electrochemical cell (See column 5, lines 18-45) wherein the electrode face has an insulator between the membrane in order to trap a reservoir of ions to produce a substantial electrical potential (See column 12, lines 22-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulator between the membrane and electrode face of Hafeman et al in the apparatus of Olgado et al in order to trap a reservoir of ions to produce a substantial electrical potential.

Regarding claim 34, Hafeman et al describes the insulator and electrode formed integrally. See figure 3a.

11. Claims 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olgado et al (US 2002/0096436) in view of Hafeman et al (US 5164319) in view of Bernard et al (US 2003/0106845).

Regarding claim 35 Olgado et al describes; an electrode base, 16, comprising an electrode member and an ion exchanger, 2289, covering the surface of the electrode; a substrate holder, 14, for holding a substrate, 221, capable of bringing the

workpiece close to or into contact with the ion exchanger of the electrode member (See page 3, para 35-36); & a power source via the controller, 222, connected to the electrode of the electrode member via anode supports (See page 3, para 36). Olgado further describes the close contact between the electrode and ion-exchanger with the substrate (See figure 2 - arm assembly brings pieces into close contact). Olgado et al further describes a semiconductor electrode in an electrochemical cell (See abstract) but does not describe an insulator interposed between the ion exchanger and the surface, facing the workpiece, of the electrode.

Hafeman et al describes a semiconductor electrode in an electrochemical cell (See column 5, lines 18-45) wherein an insulator is located between the electrode face and the membrane in order to trap a reservoir of ions to produce a substantial electrical potential (See column 12, lines 22-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulator between the membrane and electrode face of Hafeman et al in the apparatus of Olgado et al in order to trap a reservoir of ions to produce a substantial electrical potential.

Olgado et al describes an electrochemical apparatus (See page 1, para 5) wherein modified Olgado et al does not disclose at least one other ion exchanger.

Bernard et al describes an electrochemical apparatus (See abstract) comprising a plurality of ion-exchange membranes in order to be perm-selective to ions in the system (See page 1, para 0017).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of membranes in Bernard et al in the apparatus of modified Olgado et al in order to be perm-selective to ions in the system.

However, modified Olgado does not expressly describe the ion exchangers to be partly insulated from one another by an insulator.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulator in Hafeman between the ion-exchange membranes in Bernard et al in modified Olgado et al in order to separate the electrolyte among the ion exchangers.

Regarding claim 36, Hafeman et al describes the insulator interposed between the edge portion of the surface, facing the workpiece of the electrode and the ion exchanger. See figure 3a.

Regarding claim 37, Hafeman et al further describes the electrode and the insulator formed integrally. See figure 3a.

Regarding claim 38 Olgado et al describes; an electrode base, 16, comprising an electrode member and an ion exchanger, 2289, covering the surface of the electrode; a substrate holder, 14, for holding a substrate, 221, capable of bringing the workpiece close to or into contact with the ion exchanger of the electrode member (See page 3, para 35-36); & a power source via the controller, 222, connected to the electrode of the electrode member via anode supports (See page 3, para 36). Olgado further describes the close contact between the electrode and substrate (See figure 2 - arm assembly brings pieces into close contact). Olgado et al further describes a

semiconductor electrode in an electrochemical cell (See abstract) but does not describe an insulator interposed between the ion exchanger and the surface, facing the workpiece, of the electrode.

Hafeman et al describes a semiconductor electrode in an electrochemical cell (See column 5, lines 18-45) an insulator is located between the electrode face and a membrane in order to trap a reservoir of ions to produce a substantial electrical potential (See column 12, lines 22-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulator between the membrane and electrode face of Hafeman et al in the apparatus of Olgado et al in order to trap a reservoir of ions to produce a substantial electrical potential.

Olgado et al describes an electrochemical apparatus (See page 1, para 5) wherein modified Olgado et al does not disclose at least one other ion exchanger.

Bernard et al describes an electrochemical apparatus (See abstract) comprising a plurality of ion-exchange membranes in order to be perm-selective to ions in the system (See page 1, para 0017).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of ion-exchange membranes in Bernard et al in the apparatus of modified Olgado et al in order to be perm-selective to ions in the system.

However, modified Olgado does not expressly describe the ion exchangers to be partly insulated from one another by an insulator.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulator in Hafeman between the ion-exchange membranes in Bernard et al in modified Olgado et al in order to separate the electrolyte among the ion exchangers.

Regarding claim 39, modified Olgado et al describes all of the claimed limitations as discussed with respect to claim 38 above, wherein Olgado describes only one side of the membrane facing the substrate (See figure 2)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tayan Patel, Esq. whose telephone number is (571) 272-9806. The examiner can normally be reached on Monday-Thursday, 8 AM-6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER